

Attorney Docket No.: 0190135
Application Serial No.: 09/557,454

List of Claims:

Claim 1 (Currently Amended): A complementary metal oxide semiconductor (CMOS) device comprising:

a silicon substrate;
a junction field-effect transistor (JFET) formed on a surface of the silicon substrate, the JFET including a photo-absorbing layer formed on the surface of the silicon substrate; and an overglass layer formed over the JFET adapted to admit photons to the photo-absorbing layer of the JFET; and
a readout switch transistor formed to be coupled to a drain terminal of the JFET;
wherein the JFET detects incident photons admitted through the overglass layer and produces an amplified electrical signal corresponding to the photons detected, and wherein a source terminal of the readout switch transistor is connected to a bus and a resistor, forming a source follower circuit.

Claim 2 (Previously Presented): The CMOS device as in claim 1, wherein the JFET provides a relatively low corner frequency.

Claim 3 (Previously Presented): The CMOS device as in claim 1, wherein an input referred noise of the JFET is relatively low.

Claim 4 (Currently Amended): A complementary metal oxide semiconductor (CMOS) active pixel sensor (APS) pixel supported on a substrate, the CMOS APS pixel comprising:

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a junction field-effect transistor (JFET) adapted to detect photons and produce an amplified electrical signal corresponding to the photons detected; and
a readout switch transistor coupled to a drain terminal of the JFET;
wherein a source terminal of the readout switch transistor is connected to a bus
and a resistor, forming a source follower circuit.

Claim 5 (Cancelled)

Claim 6 (Currently Amended): The A complementary metal oxide semiconductor (CMOS) active pixel sensor (APS) pixel supported on a substrate, the CMOS APS pixel as in
claim 4, further comprising:

a junction field-effect transistor (JFET) adapted to detect photons and produce an amplified electrical signal corresponding to the photons detected;
a readout switch transistor coupled to a drain terminal of the JFET;
a first resistor connected between a gate terminal of the JFET and a drain terminal of the readout switch transistor; and
a second resistor connected between a source terminal of the JFET and the drain terminal of the readout switch transistor, wherein the first and second resistors provide positive feedback and laser trimmability, and
wherein a source terminal of the readout switch transistor is connected to a bus and a current source, forming a source follower.

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Claim 7 (Previously Presented): The CMOS APS pixel as in claim 4, wherein the JFET is contained in a differential amplifier circuit.

Claim 8 (Currently Amended): A digital camera comprising:
a complementary metal oxide semiconductor (CMOS) active pixel sensor (APS) imager providing image data, the imager comprising:
an array of CMOS APS pixels comprising a plurality of junction field-effect transistors (JFETs) adapted for photodetection and electrical signal amplification; and
a readout switch transistor coupled to a drain terminal of the JFET;
wherein a source terminal of the readout switch transistor is connected to a bus and a
resistor, forming a source follower circuit.

Claim 9 (Previously Presented): The digital camera as in claim 8, the array of CMOS APS pixels comprising:

a silicon substrate;
a JFET formed on the surface of the silicon substrate comprising:
a photo absorbing layer formed on the surface of the silicon substrate;
an overglass layer formed over the JFET adapted to admit photons to the photo-absorbing layer of the JFET
wherein the JFET detects incident photons admitted through the overglass layer and produces an amplified electrical signal corresponding to the photons detected.

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Claims 10-11 (Cancelled)

Claim 12 (Currently Amended): The digital camera as in claim 10 8, wherein each JFET of the plurality of JFETs is contained in a differential amplifier circuit.

Claims 13-19 (Cancelled)